

SEQUENCE LISTING

<110> Immunex Corporation  
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DuBose, Robert F.  
Wiley, Steven R.

<120> HEMATOPOIETIN RECEPTORS HPR1 AND HPR2

<130> 3160-B

<160> 29

<170> PatentIn version 3.1

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Cys Ala Val Lys Glu Ser Lys Phe Trp Ser Asp Trp Ser Gln Glu Lys  
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Ala Leu Pro Ala Lys Pro Glu Asn Ile Ser Cys Val Tyr Tyr Tyr Arg  
 35 40 45

Lys Asn Leu Thr Cys Thr Trp Ser Pro Gly Lys Glu Thr Ser Tyr Thr  
 50 55 60

Gln Tyr Thr Val Lys Arg Thr Tyr Ala Phe Gly Glu Lys His Asp Asn  
 65 70 75 80

Cys Thr Thr Asn Ser Ser Thr Ser Glu Asn Arg Ala Ser Cys Ser Phe  
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Phe Leu Pro Arg Ile Thr Ile Pro Asp Asn Tyr Thr Ile Glu Val Glu  
100 105 110

Ala Glu Asn Gly Asp Gly Val Ile Lys Ser His Met Thr Tyr Trp Arg  
115 120 125

Leu Glu Asn Ile Ala Lys Thr Glu Pro Pro Lys Ile Phe Arg Val Lys  
130 135 140

Pro Val Leu Gly Ile Lys Arg Met Ile Gln Ile Glu Trp Ile Lys Pro  
145 150 155 160

Glu Leu Ala Pro Val Ser Ser Asp Leu Lys Tyr Thr Leu Arg Phe Arg  
165 170 175

Thr Val Asn Ser Thr Ser Trp Met Glu Val Asn Phe Ala Lys Asn Arg  
180 185 190

Lys Asp Lys Asn Gln Thr Tyr Asn Leu Thr Gly Leu Gln Pro Phe Thr  
195 200 205

Glu Tyr Val Ile Ala Leu Arg Cys Ala Val Lys Glu Ser Lys Phe Trp  
210 215 220

Ser Asp Trp Ser Gln Glu Lys Met Gly Met Thr Glu Glu Glu Ala Pro  
225 230 235 240

Cys Gly Leu Glu Leu Trp Arg Val Leu Lys Pro Ala Glu Ala Asp Gly  
245 250 255

Arg Arg Pro Val Arg Leu Leu Trp Lys Lys Ala Arg Gly Ala Pro Val  
260 265 270

Leu Glu Lys Thr Leu Gly Tyr Asn Ile Trp Tyr Tyr Pro Glu Ser Asn  
275 280 285

Thr Asn Leu Thr Glu Thr Met Asn Thr Thr Asn Gln Gln Leu Glu Leu  
290 295 300

His Leu Gly Gly Glu Ser Phe Trp Val Ser Met Ile Ser Tyr Asn Ser  
305 310 315 320

Leu Gly Lys Ser Pro Val Ala Thr Leu Arg Ile Pro Ala Ile Gln Glu  
325 330 335

Lys Ser Phe Gln Cys Ile Glu Val Met Gln Ala Cys Val Ala Glu Asp  
340 345 350

Gln Leu Val Val Lys Trp Gln Ser Pro Ala Leu Asp Val Asn Thr Trp  
355 360 365

Met Ile Glu Trp Phe Pro Asp Val Asp Ser Glu Pro Thr Thr Leu Ser  
370 375 380

Trp Glu Ser Val Ser Gln Ala Thr Asn Trp Thr Ile Gln Gln Asp Lys  
385 390 395 400

Leu Lys Pro Phe Trp Cys Tyr Asn Ile Ser Val Tyr Pro Met Leu His  
405 410 415

Asp Lys Val Gly Glu Pro Tyr Ser Ile Gln Ala Tyr Ala Lys Glu Gly  
420 425 430

Val Pro Ser Glu Gly Pro Glu Thr Lys Val Glu Asn Ile Gly Val Lys  
435 440 445

Thr Val Thr Ile Thr Trp Lys Glu Ile Pro Lys Ser Glu Arg Lys Gly  
450 455 460

Ile Ile Cys Asn Tyr Thr Ile Phe Tyr Gln Ala Glu Gly Gly Lys Gly  
465 470 475 480

Phe Ser Lys Thr Val Asn Ser Ser Ile Leu Gln Tyr Gly Leu Glu Ser  
485 490 495

Leu Lys Arg Lys Thr Ser Tyr Ile Val Gln Val Met Ala Ser Thr Ser  
500 505 510

Ala Gly Gly Thr Asn Gly Thr Ser Ile Asn Phe Lys Thr Leu Ser Phe  
515 520 525

Ser Val Phe Glu Ile Ile Leu Ile Thr Ser Leu Ile Gly Gly Gly Leu  
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Leu Ile Leu Ile Ile Leu Thr Val Ala Tyr Gly Leu Lys Lys Pro Asn  
545 550 555 560

Lys Leu Thr His Leu Cys Trp Pro Thr Val Pro Asn Pro Ala Glu Ser  
565 570 575

Ser Ile Ala Thr Trp His Gly Asp Asp Phe Lys Asp Lys Leu Asn Leu  
580 585 590

Lys Glu Ser Asp Asp Ser Val Asn Thr Glu Asp Arg Ile Leu Lys Pro  
595 600 605

Cys Ser Thr Pro Ser Asp Lys Leu Val Ile Asp Lys Leu Val Val Asn  
610 615 620

Phe Gly Asn Val Leu Gln Glu Ile Phe Thr Asp Glu Ala Arg Thr Gly  
625 630 635 640

Gln Glu Asn Asn Leu Gly Gly Glu Lys Asn Gly Tyr Val Thr Cys Pro  
645 650 655

Phe Arg Pro Asp Cys Pro Leu Gly Lys Ser Phe Glu Glu Leu Pro Val  
660 665 670

Ser Pro Glu Ile Pro Pro Gly Lys Ser Gln Tyr Leu Arg Ser Arg Met  
675 680 685

Pro Glu Gly Thr Arg Pro Glu Ala Lys Glu Gln Leu Leu Phe Ser Gly  
690 695 700

Gln Ser Leu Val Pro Asp His Leu Cys Glu Glu Gly Ala Pro Asn Pro  
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Leu Pro Glu His Thr Lys Gly Glu Val  
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<212> DNA

<213> Homo sapiens

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Phe Ile Leu Leu Tyr Leu Met Asn Gln Val Asn Ser Gln Lys Lys Gly  
35 40 45

Ala Pro His Asp Leu Lys Cys Val Thr Asn Asn Leu Gln Val Trp Asn  
50 55 60

Cys Ser Trp Lys Ala Pro Ser Gly Thr Gly Arg Gly Thr Asp Tyr Glu  
65 70 75 80

Val Cys Ile Glu Asn Arg Ser Arg Ser Cys Tyr Gln Leu Glu Lys Thr  
85 90 95

Ser Ile Lys Ile Pro Ala Leu Ser His Gly Asp Tyr Glu Ile Thr Ile  
100 105 110

Asn Ser Leu His Asp Phe Gly Ser Ser Thr Ser Lys Phe Thr Leu Asn  
115 120 125

Glu Gln Asn Val Ser Leu Ile Pro Asp Thr Pro Glu Ile Leu Asn Leu  
130 135 140

Ser Ala Asp Phe Ser Thr Ser Thr Leu Tyr Leu Lys Trp Asn Asp Arg  
145 150 155 160

Gly Ser Val Phe Pro His Arg Ser Asn Val Ile Trp Glu Ile Lys Val  
165 170 175

Leu Arg Lys Glu Ser Met Glu Leu Val Lys Leu Val Thr His Asn Thr  
180 185 190

Thr Leu Asn Gly Lys Asp Thr Leu His His Trp Ser Trp Ala Ser Asp



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Asp Asn Leu His Phe Ser Gly Leu Glu Glu Trp Ser Asp Trp Ser Pro		
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Val Lys Asn Ile Ser Trp Ile Pro Asp Ser Gln Thr Lys Val Phe Pro		
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Gln Asp Lys Val Ile Leu Val Gly Ser Asp Ile Thr Phe Cys Cys Val		
	260	265 270
Ser Gln Glu Lys Val Leu Ser Ala Leu Ile Gly His Thr Asn Cys Pro		
	275	280 285
Leu Ile His Leu Asp Gly Glu Asn Val Ala Ile Lys Ile Arg Asn Ile		
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305	310	315 320
Asn Ile Phe Gly Thr Val Ile Phe Ala Gly Tyr Pro Pro Asp Thr Pro		
	325	330 335
Gln Gln Leu Asn Cys Glu Thr His Asp Leu Lys Glu Ile Ile Cys Ser		
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Trp Asn Pro Gly Arg Val Thr Ala Leu Val Gly Pro Arg Ala Thr Ser		
	355	360 365
Tyr Thr Leu Val Glu Ser Phe Ser Gly Lys Tyr Val Arg Leu Lys Arg		
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Ala Glu Ala Pro Thr Asn Glu Ser Tyr Gln Leu Leu Phe Gln Met Leu		
385	390	395 400
Pro Asn Gln Glu Ile Tyr Asn Phe Thr Leu Asn Ala His Asn Pro Leu		
	405	410 415
Gly Arg Ser Gln Ser Thr Ile Leu Val Asn Ile Thr Glu Lys Val Tyr		
	420	425 430
Pro His Thr Pro Thr Ser Phe Lys Val Lys Asp Ile Asn Ser Thr Ala		
	435	440 445

Val Lys Leu Ser Trp His Leu Pro Gly Asn Phe Ala Lys Ile Asn Phe  
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Leu Cys Glu Ile Glu Ile Lys Lys Ser Asn Ser Val Gln Glu Gln Arg  
 465 470 475 480

Asn Val Thr Ile Lys Gly Val Glu Asn Ser Ser Tyr Leu Val Ala Leu  
 485 490 495

Asp Lys Leu Asn Pro Tyr Thr Leu Tyr Thr Phe Arg Ile Arg Cys Ser  
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Thr Glu Thr Phe Trp Lys Trp Ser Lys Trp Ser Asn Lys Lys Gln His  
 515 520 525

Leu Thr Thr Glu Ala Ser Pro Ser Lys Gly Pro Asp Thr Trp Arg Glu  
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Trp Ser Ser Asp Gly Lys Asn Leu Ile Ile Tyr Trp Lys Pro Leu Pro  
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Ile Asn Glu Ala Asn Gly Lys Ile Leu Ser Tyr Asn Val Ser Cys Ser  
 565 570 575

Ser Asp Glu Glu Thr Gln Ser Leu Ser Glu Ile Pro Asp Pro Gln His  
 580 585 590

Lys Ala Glu Ile Arg Leu Asp Lys Asn Asp Tyr Ile Ile Ser Val Val  
 595 600 605

Ala Lys Asn Ser Val Gly Ser Ser Pro Pro Ser Lys Ile Ala Ser Met  
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Glu Ile Pro Asn Asp Asp Leu Lys Ile Glu Gln Val Val Gly Met Gly  
 625 630 635 640

Lys Gly Ile Leu Leu Thr Trp His Tyr Asp Pro Asn Met Thr Cys Asp  
 645 650 655

Tyr Val Ile Lys Trp Cys Asn Ser Ser Arg Ser Glu Pro Cys Leu Met  
 660 665 670

Asp Trp Arg Lys Val Pro Ser Asn Ser Thr Glu Thr Val Ile Glu Ser  
 675 680 685

Asp Glu Phe Arg Pro Gly Ile Arg Tyr Asn Phe Phe Leu Tyr Gly Cys  
 690 695 700

Arg Asn Gln Gly Tyr Gln Leu Leu Arg Ser Met Ile Gly Tyr Ile Glu  
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Glu Leu Ala Pro Ile Val Ala Pro Asn Phe Thr Val Glu Asp Thr Ser  
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Ala Asp Ser Ile Leu Val Lys Trp Glu Asp Ile Pro Val Glu Glu Leu  
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Arg Gly Phe Leu Arg Gly Tyr Leu Phe Tyr Phe Gly Lys Gly Glu Arg  
 755 760 765

Asp Thr Ser Lys Met Arg Val Leu Glu Ser Gly Arg Ser Asp Ile Lys  
 770 775 780

Val Lys Asn Ile Thr Asp Ile Ser Gln Lys Thr Leu Arg Ile Ala Asp  
 785 790 795 800

Leu Gln Gly Lys Thr Ser Tyr His Leu Val Leu Arg Ala Tyr Thr Asp  
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Gly Gly Val Gly Pro Glu Lys Ser Met Tyr Val Val Thr Lys Glu Asn  
 820 825 830

Ser Val Gly Leu Ile Ile Ala Ile Leu Ile Pro Val Ala Val Ala Val  
 835 840 845

Ile Val Gly Val Val Thr Ser Ile Leu Cys Tyr Arg Lys Arg Glu Trp  
 850 855 860

Ile Lys Glu Thr Phe Tyr Pro Asp Ile Pro Asn Pro Glu Asn Cys Lys  
 865 870 875 880

Ala Leu Gln Phe Gln Lys Ser Val Cys Glu Gly Ser Ser Ala Leu Lys  
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Thr Leu Glu Met Asn Pro Cys Thr Pro Asn Asn Val Glu Val Leu Glu  
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Thr Arg Ser Ala Phe Pro Lys Ile Glu Asp Thr Glu Ile Ile Ser Pro  
 915 920 925

Val Ala Glu Arg Pro Glu Asp Arg Ser Asp Ala Glu Pro Glu Asn His  
 930 935 940

Val Val Val Ser Tyr Cys Pro Pro Ile Ile Glu Glu Glu Ile Pro Asn  
 945 950 955 960

Pro Ala Ala Asp Glu Ala Gly Gly Thr Ala Gln Val Ile Tyr Ile Asp  
 965 970 975

Val Gln Ser Met Tyr Gln Pro Gln Ala Lys Pro Glu Glu Glu Gln Glu  
 980 985 990

Asn Asp Pro Val Gly Gly Ala Gly Tyr Lys Pro Gln Met His Leu Pro  
 995 1000 1005

Ile Asn Ser Thr Val Glu Asp Ile Ala Ala Glu Glu Asp Leu Asp  
 1010 1015 1020

Lys Thr Ala Gly Tyr Arg Pro Gln Ala Asn Val Asn Thr Trp Asn  
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Leu Val Ser Pro Asp Ser Pro Arg Ser Ile Asp Ser Asn Ser Glu  
 1040 1045 1050

Ile Val Ser Phe Gly Ser Pro Cys Ser Ile Asn Ser Arg Gln Phe  
 1055 1060 1065

Leu Ile Pro Pro Lys Asp Glu Asp Ser Pro Lys Ser Asn Gly Gly  
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Gly Trp Ser Phe Thr Asn Phe Phe Gln Asn Lys Pro Asn Asp  
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Thr Pro Val Ser Leu Lys Val Ser Thr Asn Ser Thr Arg Gln Ser Leu  
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His Leu Gln Trp Thr Val His Asn Leu Pro Tyr His Gln Glu Leu Lys  
50 55 60

Met Val Phe Gln Ile Gln Ile Ser Arg Ile Glu Thr Ser Asn Val Ile  
65 70 75 80

Trp Val Gly Asn Tyr Ser Thr Thr Val Lys Trp Asn Gln Val Leu His  
85 90 95

Trp Ser Trp Glu Ser Glu Leu Pro Leu Glu Cys Ala Thr His Phe Val  
100 105 110

Arg Ile Lys Ser Leu Val Asp Asp Ala Lys Phe Pro Glu Pro Asn Phe  
115 120 125

Trp Ser Asn Trp Ser Ser Trp Glu Glu Val Ser Val Gln Asp Ser Thr  
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Gly Gln Asp Ile Leu Phe Val Phe Pro Lys Asp Lys Leu Val Glu Glu  
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Gly Thr Asn Val Thr Ile Cys Tyr Val Ser Arg Asn Ile Gln Asn Asn  
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Val Ser Cys Tyr Leu Glu Gly Lys Gln Ile His Gly Glu Gln Leu Asp  
180 185 190

Pro His Val Thr Ala Phe Asn Leu Asn Ser Val Pro Phe Ile Arg Asn  
195 200 205

Lys Gly Thr Asn Ile Tyr Cys Glu Ala Ser Gln Gly Asn Val Ser Glu  
210 215 220

Gly Met Lys Gly Ile Val Leu Phe Val Ser Lys Val Leu Glu Glu Pro  
225 230 235 240

Lys Asp Phe Ser Cys Glu Thr Glu Asp Phe Lys Thr Leu His Cys Thr  
245 250 255

Trp Asp Pro Gly Thr Asp Thr Ala Leu Gly Trp Ser Lys Gln Pro Ser  
260 265 270

Gln Ser Tyr Thr Leu Phe Glu Ser Phe Ser Gly Glu Lys Lys Leu Cys  
275 280 285

Thr His Lys Asn Trp Cys Asn Trp Gln Ile Thr Gln Asp Ser Gln Glu  
290 295 300

Thr Tyr Asn Phe Thr Leu Ile Ala Glu Asn Tyr Leu Arg Lys Arg Ser  
305 310 315 320

Val Asn Ile Leu Phe Asn Leu Thr His Arg Val Tyr Leu Met Asn Pro  
325 330 335

Phe Ser Val Asn Phe Glu Asn Val Asn Ala Thr Asn Ala Ile Met Thr  
340 345 350

Trp Lys Val His Ser Ile Arg Asn Asn Phe Thr Tyr Leu Cys Gln Ile  
355 360 365

Glu Leu His Gly Glu Gly Lys Met Met Gln Tyr Asn Val Ser Ile Lys  
370 375 380

Val Asn Gly Glu Tyr Phe Leu Ser Glu Leu Glu Pro Ala Thr Glu Tyr  
385 390 395 400

Met Ala Arg Val Arg Cys Ala Asp Ala Ser His Phe Trp Lys Trp Ser  
405 410 415

Glu Trp Ser Gly Gln Asn Phe Thr Thr Leu Glu Ala Ala Pro Ser Glu  
420 425 430

Ala Pro Asp Val Trp Arg Ile Val Ser Leu Glu Pro Gly Asn His Thr  
435 440 445

Val Thr Leu Phe Trp Lys Pro Leu Ser Lys Leu His Ala Asn Gly Lys  
450 455 460

Ile Leu Phe Tyr Asn Val Val Val Glu Asn Leu Asp Lys Pro Ser Ser  
465 470 475 480

Ser Glu Leu His Ser Ile Pro Ala Pro Ala Asn Ser Thr Lys Leu Ile  
485 490 495

Leu Asp Arg Cys Ser Tyr Gln Ile Cys Val Ile Ala Asn Asn Ser Val  
500 505 510

Gly Ala Ser Pro Ala Ser Val Ile Val Ile Ser Ala Asp Pro Glu Asn  
515 520 525

Lys Glu Val Glu Glu Glu Arg Ile Ala Gly Thr Glu Gly Gly Phe Ser  
530 535 540

Leu Ser Trp Lys Pro Gln Pro Gly Asp Val Ile Gly Tyr Val Val Asp  
545 550 555 560

Trp Cys Asp His Thr Gln Asp Val Leu Gly Asp Phe Gln Trp Lys Asn  
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Val Gly Pro Asn Thr Thr Ser Thr Val Ile Ser Thr Asp Ala Phe Arg  
580 585 590

Pro Gly Val Arg Tyr Asp Phe Arg Ile Tyr Gly Leu Ser Thr Lys Arg  
595 600 605

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610 615 620

Pro Ser Asp Asn Pro His Val Leu Val Asp Thr Leu Thr Ser His Ser  
625 630 635 640

Phe Thr Leu Ser Trp Lys Asp Tyr Ser Thr Glu Ser Gln Pro Gly Phe  
645 650 655

Ile Gln Gly Tyr His Val Tyr Leu Lys Ser Lys Ala Arg Gln Cys His  
660 665 670

Pro Arg Phe Glu Lys Ala Val Leu Ser Asp Gly Ser Glu Cys Cys Lys  
675 680 685

Tyr Lys Ile Asp Asn Pro Glu Glu Lys Ala Leu Ile Val Asp Asn Leu  
690 695 700

Lys Pro Glu Ser Phe Tyr Glu Phe Phe Ile Thr Pro Phe Thr Ser Ala  
705 710 715 720

Gly Glu Gly Pro Ser Ala Thr Phe Thr Lys Val Thr Thr Pro Asp Glu  
725 730 735

His Ser Ser Met Leu Ile His Ile Leu Leu Pro Met Val Phe Cys Val  
740 745 750

Leu Leu Ile Met Val Met Cys Tyr Leu Lys Ser Gln Trp Ile Lys Glu  
755 760 765

Thr Cys Tyr Pro Asp Ile Pro Asp Pro Tyr Lys Ser Ser Ile Leu Ser

770

775

780

Leu Ile Lys Phe Lys Glu Asn Pro His Leu Ile Ile Met Asn Val Ser  
 785 790 795 800

Asp Cys Ile Pro Asp Ala Ile Glu Val Val Ser Lys Pro Glu Gly Thr  
 805 810 815

Lys Ile Gln Phe Leu Gly Thr Arg Lys Ser Leu Thr Glu Thr Glu Leu  
 820 825 830

Thr Lys Pro Asn Tyr Leu Tyr Leu Leu Pro Thr Glu Lys Asn His Ser  
 835 840 845

Gly Pro Gly Pro Cys Ile Cys Phe Glu Asn Leu Thr Tyr Asn Gln Ala  
 850 855 860

Ala Ser Asp Ser Gly Ser Cys Gly His Val Pro Val Ser Pro Lys Ala  
 865 870 875 880

Pro Ser Met Leu Gly Leu Met Thr Ser Pro Glu Asn Val Leu Lys Ala  
 885 890 895

Leu Glu Lys Asn Tyr Met Asn Ser Leu Gly Glu Ile Pro Ala Gly Glu  
 900 905 910

Thr Ser Leu Asn Tyr Val Ser Gln Leu Ala Ser Pro Met Phe Gly Asp  
 915 920 925

Lys Asp Ser Leu Pro Thr Asn Pro Val Glu Ala Pro His Cys Ser Glu  
 930 935 940

Tyr Lys Met Gln Met Ala Val Ser Leu Arg Leu Ala Leu Pro Pro Pro  
 945 950 955 960

Thr Glu Asn Ser Ser Leu Ser Ser Ile Thr Leu Leu Asp Pro Gly Glu  
 965 970 975

His Tyr Cys

<210> 8  
 <211> 918  
 <212> PRT  
 <213> Homo sapiens  
 <400> 8



Met Leu Thr Leu Gln Thr Trp Val Val Gln Ala Leu Phe Ile Phe Leu  
1 5 10 15

Thr Thr Glu Ser Thr Gly Glu Leu Leu Asp Pro Cys Gly Tyr Ile Ser  
20 25 30

Pro Glu Ser Pro Val Val Gln Leu His Ser Asn Phe Thr Ala Val Cys  
35 40 45

Val Leu Lys Glu Lys Cys Met Asp Tyr Phe His Val Asn Ala Asn Tyr  
50 55 60

Ile Val Trp Lys Thr Asn His Phe Thr Ile Pro Lys Glu Gln Tyr Thr  
65 70 75 80

Ile Ile Asn Arg Thr Ala Ser Ser Val Thr Phe Thr Asp Ile Ala Ser  
85 90 95

Leu Asn Ile Gln Leu Thr Cys Asn Ile Leu Thr Phe Gly Gln Leu Glu  
100 105 110

Gln Asn Val Tyr Gly Ile Thr Ile Ile Ser Gly Leu Pro Pro Glu Lys  
115 120 125

Pro Lys Asn Leu Ser Cys Ile Val Asn Glu Gly Lys Lys Met Arg Cys  
130 135 140

Glu Trp Asp Gly Gly Arg Glu Thr His Leu Glu Thr Asn Phe Thr Leu  
145 150 155 160

Lys Ser Glu Trp Ala Thr His Lys Phe Ala Asp Cys Lys Ala Lys Arg  
165 170 175

Asp Thr Pro Thr Ser Cys Thr Val Asp Tyr Ser Thr Val Tyr Phe Val  
180 185 190

Asn Ile Glu Val Trp Val Glu Ala Glu Asn Ala Leu Gly Lys Val Thr  
195 200 205

Ser Asp His Ile Asn Phe Asp Pro Val Tyr Lys Val Lys Pro Asn Pro  
210 215 220

Pro His Asn Leu Ser Val Ile Asn Ser Glu Glu Leu Ser Ser Ile Leu  
225 230 235 240

Lys Leu Thr Trp Thr Asn Pro Ser Ile Lys Ser Val Ile Ile Leu Lys  
 245 250 255

Tyr Asn Ile Gln Tyr Arg Thr Lys Asp Ala Ser Thr Trp Ser Gln Ile  
 260 265 270

Pro Pro Glu Asp Thr Ala Ser Thr Arg Ser Ser Phe Thr Val Gln Asp  
 275 280 285

Leu Lys Pro Phe Thr Glu Tyr Val Phe Arg Ile Arg Cys Met Lys Glu  
 290 295 300

Asp Gly Lys Gly Tyr Trp Ser Asp Trp Ser Glu Glu Ala Ser Gly Ile  
 305 310 315 320

Thr Tyr Glu Asp Arg Pro Ser Lys Ala Pro Ser Phe Trp Tyr Lys Ile  
 325 330 335

Asp Pro Ser His Thr Gln Gly Tyr Arg Thr Val Gln Leu Val Trp Lys  
 340 345 350

Thr Leu Pro Pro Phe Glu Ala Asn Gly Lys Ile Leu Asp Tyr Glu Val  
 355 360 365

Thr Leu Thr Arg Trp Lys Ser His Leu Gln Asn Tyr Thr Val Asn Ala  
 370 375 380

Thr Lys Leu Thr Val Asn Leu Thr Asn Asp Arg Tyr Leu Ala Thr Leu  
 385 390 395 400

Thr Val Arg Asn Leu Val Gly Lys Ser Asp Ala Ala Val Leu Thr Ile  
 405 410 415

Pro Ala Cys Asp Phe Gln Ala Thr His Pro Val Met Asp Leu Lys Ala  
 420 425 430

Phe Pro Lys Asp Asn Met Leu Trp Val Glu Trp Thr Thr Pro Arg Glu  
 435 440 445

Ser Val Lys Lys Tyr Ile Leu Glu Trp Cys Val Leu Ser Asp Lys Ala  
 450 455 460

Pro Cys Ile Thr Asp Trp Gln Gln Glu Asp Gly Thr Val His Arg Thr  
 465 470 475 480

Tyr Leu Arg Gly Asn Leu Ala Glu Ser Lys Cys Tyr Leu Ile Thr Val

485

490

495

Thr Pro Val Tyr Ala Asp Gly Pro Gly Ser Pro Glu Ser Ile Lys Ala  
500 505 510

Tyr Leu Lys Gln Ala Pro Pro Ser Lys Gly Pro Thr Val Arg Thr Lys  
515 520 525

Lys Val Gly Lys Asn Glu Ala Val Leu Glu Trp Asp Gln Leu Pro Val  
530 535 540

Asp Val Gln Asn Gly Phe Ile Arg Asn Tyr Thr Ile Phe Tyr Arg Thr  
545 550 555 560

Ile Ile Gly Asn Glu Thr Ala Val Asn Val Asp Ser Ser His Thr Glu  
565 570 575

Tyr Thr Leu Ser Ser Leu Thr Ser Asp Thr Leu Tyr Met Val Arg Met  
580 585 590

Ala Ala Tyr Thr Asp Glu Gly Gly Lys Asp Gly Pro Glu Phe Thr Phe  
595 600 605

Thr Thr Pro Lys Phe Ala Gln Gly Glu Ile Glu Ala Ile Val Val Pro  
610 615 620

Val Cys Leu Ala Phe Leu Leu Thr Thr Leu Leu Gly Val Leu Phe Cys  
625 630 635 640

Phe Asn Lys Arg Asp Leu Ile Lys Lys His Ile Trp Pro Asn Val Pro  
645 650 655

Asp Pro Ser Lys Ser His Ile Ala Gln Trp Ser Pro His Thr Pro Pro  
660 665 670

Arg His Asn Phe Asn Ser Lys Asp Gln Met Tyr Ser Asp Gly Asn Phe  
675 680 685

Thr Asp Val Ser Val Val Glu Ile Glu Ala Asn Asp Lys Lys Pro Phe  
690 695 700

Pro Glu Asp Leu Lys Ser Leu Asp Leu Phe Lys Lys Glu Lys Ile Asn  
705 710 715 720

Thr Glu Gly His Ser Ser Gly Ile Gly Gly Ser Ser Cys Met Ser Ser  
725 730 735

Ser Arg Pro Ser Ile Ser Ser Ser Asp Glu Asn Glu Ser Ser Gln Asn  
740 745 750

Thr Ser Ser Thr Val Gln Tyr Ser Thr Val Val His Ser Gly Tyr Arg  
755 760 765

His Gln Val Pro Ser Val Gln Val Phe Ser Arg Ser Glu Ser Thr Gln  
770 775 780

Pro Leu Leu Asp Ser Glu Glu Arg Pro Glu Asp Leu Gln Leu Val Asp  
785 790 795 800

His Val Asp Gly Gly Asp Gly Ile Leu Pro Arg Gln Gln Tyr Phe Lys  
805 810 815

Gln Asn Cys Ser Gln His Glu Ser Ser Pro Asp Ile Ser His Phe Glu  
820 825 830

Arg Ser Lys Gln Val Ser Ser Val Asn Glu Glu Asp Phe Val Arg Leu  
835 840 845

Lys Gln Gln Ile Ser Asp His Ile Ser Gln Ser Cys Gly Ser Gly Gln  
850 855 860

Met Lys Met Phe Gln Glu Val Ser Ala Ala Asp Ala Phe Gly Pro Gly  
865 870 875 880

Thr Glu Gly Gln Val Glu Arg Phe Glu Thr Val Gly Met Glu Ala Ala  
885 890 895

Thr Asp Glu Gly Met Pro Lys Ser Tyr Leu Pro Gln Thr Val Arg Gln  
900 905 910

Gly Gly Tyr Met Pro Gln  
915

<210> 9  
<211> 836  
<212> PRT  
<213> Homo sapiens

<400> 9

Met Ala Arg Leu Gly Asn Cys Ser Leu Thr Trp Ala Ala Leu Ile Ile  
1 5 10 15

Leu Leu Leu Pro Gly Ser Leu Glu Glu Cys Gly His Ile Ser Val Ser  
 20 25 30

Ala Pro Ile Val His Leu Gly Asp Pro Ile Thr Ala Ser Cys Ile Ile  
 35 40 45

Lys Gln Asn Cys Ser His Leu Asp Pro Glu Pro Gln Ile Leu Trp Arg  
 50 55 60

Leu Gly Ala Glu Leu Gln Pro Gly Gly Arg Gln Gln Arg Leu Ser Asp  
 65 70 75 80

Gly Thr Gln Glu Ser Ile Ile Thr Leu Pro His Leu Asn His Thr Gln  
 85 90 95

Ala Phe Leu Ser Cys Cys Leu Asn Trp Gly Asn Ser Leu Gln Ile Leu  
 100 105 110

Asp Gln Val Glu Leu Arg Ala Gly Tyr Pro Pro Ala Ile Pro His Asn  
 115 120 125

Leu Ser Cys Leu Met Asn Leu Thr Thr Ser Ser Leu Ile Cys Gln Trp  
 130 135 140

Glu Pro Gly Pro Glu Thr His Leu Pro Thr Ser Phe Thr Leu Lys Ser  
 145 150 155 160

Phe Lys Ser Arg Gly Asn Cys Gln Thr Gln Gly Asp Ser Ile Leu Asp  
 165 170 175

Cys Val Pro Lys Asp Gly Gln Ser His Cys Cys Ile Pro Arg Lys His  
 180 185 190

Leu Leu Leu Tyr Gln Asn Met Gly Ile Trp Val Gln Ala Glu Asn Ala  
 195 200 205

Leu Gly Thr Ser Met Ser Pro Gln Leu Cys Leu Asp Pro Met Asp Val  
 210 215 220

Val Lys Leu Glu Pro Pro Met Leu Arg Thr Met Asp Pro Ser Pro Glu  
 225 230 235 240

Ala Ala Pro Pro Gln Ala Gly Cys Leu Gln Leu Cys Trp Glu Pro Trp  
 245 250 255

Gln Pro Gly Leu His Ile Asn Gln Lys Cys Glu Leu Arg His Lys Pro

260										265										270																									
Gln	Arg	Gly	Glu	Ala	Ser	Trp	Ala	Leu	Val	Gly	Pro	Leu	Pro	Leu	Glu					Gln	Arg	Gly	Glu	Ala	Ser	Trp	Ala	Leu	Val	Gly	Pro	Leu	Pro	Leu	Glu										
		275					280					285																																	
Ala	Leu	Gln	Tyr	Glu	Leu	Cys	Gly	Leu	Leu	Pro	Ala	Thr	Ala	Tyr	Thr					Ala	Leu	Gln	Tyr	Glu	Leu	Cys	Gly	Leu	Leu	Pro	Ala	Thr	Ala	Tyr	Thr										
	290					295					300																																		
Leu	Gln	Ile	Arg	Cys	Ile	Arg	Trp	Pro	Leu	Pro	Gly	His	Trp	Ser	Asp					Leu	Gln	Ile	Arg	Cys	Ile	Arg	Trp	Pro	Leu	Pro	Gly	His	Trp	Ser	Asp										
305					310					315					320																														
Trp	Ser	Pro	Ser	Leu	Glu	Leu	Arg	Thr	Thr	Glu	Arg	Ala	Pro	Thr	Val					Trp	Ser	Pro	Ser	Leu	Glu	Leu	Arg	Thr	Thr	Glu	Arg	Ala	Pro	Thr	Val										
				325					330					335																															
Arg	Leu	Asp	Thr	Trp	Trp	Arg	Gln	Arg	Gln	Leu	Asp	Pro	Arg	Thr	Val					Arg	Leu	Asp	Thr	Trp	Trp	Arg	Gln	Arg	Gln	Leu	Asp	Pro	Arg	Thr	Val										
			340					345					350																																
Gln	Leu	Phe	Trp	Lys	Pro	Val	Pro	Leu	Glu	Glu	Asp	Ser	Gly	Arg	Ile					Gln	Leu	Phe	Trp	Lys	Pro	Val	Pro	Leu	Glu	Glu	Asp	Ser	Gly	Arg	Ile										
		355					360					365																																	
Gln	Gly	Tyr	Val	Val	Ser	Trp	Arg	Pro	Ser	Gly	Gln	Ala	Gly	Ala	Ile					Gln	Gly	Tyr	Val	Val	Ser	Trp	Arg	Pro	Ser	Gly	Gln	Ala	Gly	Ala	Ile										
	370					375					380																																		
Leu	Pro	Leu	Cys	Asn	Thr	Thr	Glu	Leu	Ser	Cys	Thr	Phe	His	Leu	Pro					Leu	Pro	Leu	Cys	Asn	Thr	Thr	Glu	Leu	Ser	Cys	Thr	Phe	His	Leu	Pro										
385					390					395					400																														
Ser	Glu	Ala	Gln	Glu	Val	Ala	Leu	Val	Ala	Tyr	Asn	Ser	Ala	Gly	Thr					Ser	Glu	Ala	Gln	Glu	Val	Ala	Leu	Val	Ala	Tyr	Asn	Ser	Ala	Gly	Thr										

Gly Pro Ser Gln His Val Tyr Ala Tyr Ser Gln Glu Met Ala Pro Ser  
515 520 525

His Ala Pro Glu Leu His Leu Lys His Ile Gly Lys Thr Trp Ala Gln  
530 535 540

Leu Glu Trp Val Pro Glu Pro Pro Glu Leu Gly Lys Ser Pro Leu Thr  
545 550 555 560

His Tyr Thr Ile Phe Trp Thr Asn Ala Gln Asn Gln Ser Phe Ser Ala  
565 570 575

Ile Leu Asn Ala Ser Ser Arg Gly Phe Val Leu His Gly Leu Glu Pro  
580 585 590

Ala Ser Leu Tyr His Ile His Leu Met Ala Ala Ser Gln Ala Gly Ala  
595 600 605

Thr Asn Ser Thr Val Leu Thr Leu Met Thr Leu Thr Pro Glu Gly Ser  
610 615 620

Glu Leu His Ile Ile Leu Gly Leu Phe Gly Leu Leu Leu Leu Thr  
625 630 635 640

Cys Leu Cys Gly Thr Ala Trp Leu Cys Cys Ser Pro Asn Arg Lys Asn  
645 650 655

Pro Leu Trp Pro Ser Val Pro Asp Pro Ala His Ser Ser Leu Gly Ser  
660 665 670

Trp Val Pro Thr Ile Met Glu Glu Asp Ala Phe Gln Leu Pro Gly Leu  
675 680 685

Gly Thr Pro Pro Ile Thr Lys Leu Thr Val Leu Glu Glu Asp Glu Lys  
690 695 700

Lys Pro Val Pro Trp Glu Ser His Asn Ser Ser Glu Thr Cys Gly Leu  
705 710 715 720

Pro Thr Leu Val Gln Thr Tyr Val Leu Gln Gly Asp Pro Arg Ala Val  
725 730 735

Ser Thr Gln Pro Gln Ser Gln Ser Gly Thr Ser Asp Gln Val Leu Tyr  
740 745 750

Gly Gln Leu Leu Gly Ser Pro Thr Ser Pro Gly Pro Gly His Tyr Leu  
 755 760 765

Arg Cys Asp Ser Thr Gln Pro Leu Leu Ala Gly Leu Thr Pro Ser Pro  
 770 775 780

Lys Ser Tyr Glu Asn Leu Trp Phe Gln Ala Ser Pro Leu Gly Thr Leu  
 785 790 795 800

Val Thr Pro Ala Pro Ser Gln Glu Asp Asp Cys Val Phe Gly Pro Leu  
 805 810 815

Leu Asn Phe Pro Leu Leu Gln Gly Ile Arg Val His Gly Met Glu Ala  
 820 825 830

Leu Gly Ser Phe  
 835

<210> 10  
 <211> 7  
 <212> PRT  
 <213> Homo sapiens

<400> 10

Trp Lys Ser Thr Ser Val Lys  
 1 5

<210> 11  
 <211> 15  
 <212> PRT  
 <213> Homo sapiens

<400> 11

Glu Gly Lys Leu Leu Pro Ala Ile Pro Val Leu Ser Ala Leu Lys  
 1 5 10 15

<210> 12  
 <211> 726  
 <212> PRT  
 <213> Mus musculus

<400> 12

Met Lys Pro Leu Gly Val Asn Ala Gly Ile Met Trp Thr Leu Ala Leu  
 1 5 10 15

Trp Ala Phe Ser Phe Leu Cys Lys Phe Ser Leu Ala Val Leu Pro Thr  
 20 25 30



Lys Pro Glu Asn Ile Ser Cys Val Phe Tyr Phe Asp Arg Asn Leu Thr  
 35 40 45

Cys Thr Trp Arg Pro Glu Lys Glu Thr Asn Asp Thr Ser Tyr Ile Val  
 50 55 60

Thr Leu Thr Tyr Ser Tyr Gly Lys Ser Asn Tyr Ser Asp Asn Ala Thr  
 65 70 75 80

Glu Ala Ser Tyr Ser Phe Pro Arg Ser Cys Ala Met Pro Pro Asp Ile  
 85 90 95

Cys Ser Val Glu Val Gln Ala Gln Asn Gly Asp Gly Lys Val Lys Ser  
 100 105 110

Asp Ile Thr Tyr Trp His Leu Ile Ser Ile Ala Lys Thr Glu Pro Pro  
 115 120 125

Ile Ile Leu Ser Val Asn Pro Ile Cys Asn Arg Met Phe Gln Ile Gln  
 130 135 140

Trp Lys Pro Arg Glu Lys Thr Arg Gly Phe Pro Leu Val Cys Met Leu  
 145 150 155 160

Arg Phe Arg Thr Val Asn Ser Ser Arg Trp Thr Glu Val Asn Phe Glu  
 165 170 175

Asn Cys Lys Gln Val Cys Asn Leu Thr Gly Leu Gln Ala Phe Thr Glu  
 180 185 190

Tyr Val Leu Ala Leu Arg Phe Arg Phe Asn Asp Ser Arg Tyr Trp Ser  
 195 200 205

Lys Trp Ser Lys Glu Glu Thr Arg Val Thr Met Glu Glu Val Pro His  
 210 215 220

Val Leu Asp Leu Trp Arg Ile Leu Glu Pro Ala Asp Met Asn Gly Asp  
 225 230 235 240

Arg Lys Val Arg Leu Leu Trp Lys Lys Ala Arg Gly Ala Pro Val Leu  
 245 250 255

Glu Lys Thr Phe Gly Tyr His Ile Gln Tyr Phe Ala Glu Asn Ser Thr  
 260 265 270

Asn Leu Thr Glu Ile Asn Asn Ile Thr Thr Gln Gln Tyr Glu Leu Leu  
 275 280 285

Leu Met Ser Gln Ala His Ser Val Ser Val Thr Ser Phe Asn Ser Leu  
 290 295 300

Gly Lys Ser Gln Glu Thr Ile Leu Arg Ile Pro Asp Val His Glu Lys  
 305 310 315 320

Thr Phe Gln Tyr Ile Lys Ser Met Gln Ala Tyr Ile Ala Glu Pro Leu  
 325 330 335

Leu Val Val Asn Trp Gln Ser Ser Ile Pro Ala Val Asp Thr Trp Ile  
 340 345 350

Val Glu Trp Leu Pro Glu Ala Ala Met Ser Lys Phe Pro Ala Leu Ser  
 355 360 365

Trp Glu Ser Val Ser Gln Val Thr Asn Trp Thr Ile Glu Gln Asp Lys  
 370 375 380

Leu Lys Pro Phe Thr Cys Tyr Asn Ile Ser Val Tyr Pro Val Leu Gly  
 385 390 395 400

His Arg Val Gly Glu Pro Tyr Ser Ile Gln Ala Tyr Ala Lys Glu Gly  
 405 410 415

Thr Pro Leu Lys Gly Pro Glu Thr Arg Val Glu Asn Ile Gly Leu Arg  
 420 425 430

Thr Ala Thr Ile Thr Trp Lys Glu Ile Pro Lys Ser Ala Arg Asn Gly  
 435 440 445

Phe Ile Asn Asn Tyr Thr Val Phe Tyr Gln Ala Glu Gly Gly Lys Glu  
 450 455 460

Leu Ser Lys Thr Val Asn Ser His Ala Leu Gln Cys Asp Leu Glu Ser  
 465 470 475 480

Leu Thr Arg Arg Thr Ser Tyr Thr Val Trp Val Met Ala Ser Thr Arg  
 485 490 495

Ala Gly Gly Thr Asn Gly Val Arg Ile Asn Phe Lys Thr Leu Ser Ile  
 500 505 510

Ser Val Phe Glu Val Val Leu Leu Thr Ser Leu Val Gly Gly Gly Leu

515                      520                      525  
 Leu Leu Leu Ser Ile Lys Thr Val Thr Phe Gly Leu Arg Lys Pro Asn  
 530                      535                      540  
 Arg Leu Thr Pro Leu Cys Cys Pro Asp Val Pro Asn Pro Ala Glu Ser  
 545                      550                      555                      560  
 Ser Leu Ala Thr Trp Leu Gly Asp Gly Phe Lys Lys Ser Asn Met Lys  
 565                      570                      575  
 Glu Thr Gly Asn Ser Gly Asn Thr Glu Asp Val Val Leu Lys Pro Cys  
 580                      585                      590  
 Pro Val Pro Ala Asp Leu Ile Asp Lys Leu Val Val Asn Phe Glu Asn  
 595                      600                      605  
 Phe Leu Glu Val Val Leu Thr Glu Glu Ala Gly Lys Gly Gln Ala Ser  
 610                      615                      620  
 Ile Leu Gly Gly Glu Ala Asn Glu Tyr Val Thr Ser Pro Ser Arg Pro  
 625                      630                      635                      640  
 Asp Gly Pro Pro Gly Lys Ser Phe Lys Glu Pro Ser Ile Leu Thr Glu  
 645                      650                      655  
 Val Ala Ser Glu Asp Ser His Ser Thr Cys Ser Arg Met Ala Asp Glu  
 660                      665                      670  
 Ala Tyr Ser Glu Leu Ala Arg Gln Pro Ser Ser Ser Cys Gln Ser Pro  
 675                      680                      685  
 Gly Leu Ser Pro Pro Arg Glu Asp Gln Ala Gln Asn Pro Tyr Leu Lys  
 690                      695                      700  
 Asn Ser Val Thr Thr Arg Glu Phe Leu Val His Glu Asn Ile Pro Glu  
 705                      710                      715                      720  
 His Ser Lys Gly Glu Val  
 725

<210> 13  
 <211> 252  
 <212> PRT  
 <213> Homo sapiens  
 <400> 13

Met Lys Leu Ser Pro Gln Pro Ser Cys Val Asn Leu Gly Met Met Trp  
1 5 10 15

Thr Trp Ala Leu Trp Met Leu Pro Ser Leu Cys Lys Phe Ser Leu Ala  
20 25 30

Ala Leu Pro Ala Lys Pro Glu Asn Ile Ser Cys Val Tyr Tyr Tyr Arg  
35 40 45

Lys Asn Leu Thr Cys Thr Trp Ser Pro Gly Lys Glu Thr Ser Tyr Thr  
50 55 60

Gln Tyr Thr Val Lys Arg Thr Tyr Ala Phe Gly Glu Lys His Asp Asn  
65 70 75 80

Cys Thr Thr Asn Ser Ser Thr Ser Glu Asn Arg Ala Ser Cys Ser Phe  
85 90 95

Phe Leu Pro Arg Ile Thr Ile Pro Asp Asn Tyr Thr Ile Glu Val Glu  
100 105 110

Ala Glu Asn Gly Asp Gly Val Ile Lys Ser His Met Thr Tyr Trp Arg  
115 120 125

Leu Glu Asn Ile Ala Lys Thr Glu Pro Pro Lys Ile Phe Arg Val Lys  
130 135 140

Pro Val Leu Gly Ile Lys Arg Met Ile Gln Ile Glu Trp Ile Lys Pro  
145 150 155 160

Glu Leu Ala Pro Val Ser Ser Asp Leu Lys Tyr Thr Leu Arg Phe Arg  
165 170 175

Thr Val Asn Ser Thr Ser Trp Met Glu Val Asn Phe Ala Lys Asn Arg  
180 185 190

Lys Asp Lys Asn Gln Thr Tyr Asn Leu Thr Gly Leu Gln Pro Phe Thr  
195 200 205

Glu Tyr Val Ile Ala Leu Arg Cys Ala Val Lys Glu Ser Lys Phe Trp  
210 215 220

Ser Asp Trp Ser Gln Glu Lys Met Gly Met Thr Glu Glu Glu Gly Lys  
225 230 235 240

Leu Leu Pro Ala Ile Pro Val Leu Ser Thr Leu Val  
 245 250

<210> 14  
 <211> 652  
 <212> PRT  
 <213> Homo sapiens

<400> 14

Met Lys Leu Ser Pro Gln Pro Ser Cys Val Asn Leu Gly Met Met Trp  
 1 5 10 15

Thr Trp Ala Leu Trp Met Leu Pro Ser Leu Cys Lys Phe Ser Leu Ala  
 20 25 30

Ala Leu Pro Ala Lys Pro Glu Asn Ile Ser Cys Val Tyr Tyr Tyr Arg  
 35 40 45

Lys Asn Leu Thr Cys Thr Trp Ser Pro Gly Lys Glu Thr Ser Tyr Thr  
 50 55 60

Gln Tyr Thr Val Lys Arg Thr Tyr Ala Phe Gly Glu Lys His Asp Asn  
 65 70 75 80

Cys Thr Thr Asn Ser Ser Thr Ser Glu Asn Arg Ala Ser Cys Ser Phe  
 85 90 95

Phe Leu Pro Arg Ile Thr Ile Pro Asp Asn Tyr Thr Ile Glu Val Glu  
 100 105 110

Ala Glu Asn Gly Asp Gly Val Ile Lys Ser His Met Thr Tyr Trp Arg  
 115 120 125

Leu Glu Asn Ile Ala Lys Thr Glu Pro Pro Lys Ile Phe Arg Val Lys  
 130 135 140

Pro Val Leu Gly Ile Lys Arg Met Ile Gln Ile Glu Trp Ile Lys Pro  
 145 150 155 160

Glu Leu Ala Pro Val Ser Ser Asp Leu Lys Tyr Thr Leu Arg Phe Arg  
 165 170 175

Thr Val Asn Ser Thr Ser Trp Met Glu Val Asn Phe Ala Lys Asn Arg  
 180 185 190

Lys Asp Lys Asn Gln Thr Tyr Asn Leu Thr Gly Leu Gln Pro Phe Thr  
 195 200 205

Glu Tyr Val Ile Ala Leu Arg Cys Ala Val Lys Glu Ser Lys Phe Trp  
210 215 220

Ser Asp Trp Ser Gln Glu Lys Met Gly Met Thr Glu Glu Glu Ala Pro  
225 230 235 240

Cys Gly Leu Glu Leu Trp Arg Val Leu Lys Pro Ala Glu Ala Asp Gly  
245 250 255

Arg Arg Pro Val Arg Leu Leu Trp Lys Lys Ala Arg Gly Ala Pro Val  
260 265 270

Leu Glu Lys Thr Leu Gly Tyr Asn Ile Trp Tyr Tyr Pro Glu Ser Asn  
275 280 285

Thr Asn Leu Thr Glu Thr Met Asn Thr Thr Asn Gln Gln Leu Glu Leu  
290 295 300

His Leu Gly Gly Glu Ser Phe Trp Val Ser Met Ile Ser Tyr Asn Ser  
305 310 315 320

Leu Gly Lys Ser Pro Val Ala Thr Leu Arg Ile Pro Ala Ile Gln Glu  
325 330 335

Lys Ser Phe Gln Cys Ile Glu Val Met Gln Ala Cys Val Ala Glu Asp  
340 345 350

Gln Leu Val Val Lys Trp Gln Ser Ser Ala Leu Asp Val Asn Thr Trp  
355 360 365

Met Ile Glu Trp Phe Pro Asp Val Asp Ser Glu Pro Thr Thr Leu Ser  
370 375 380

Trp Glu Ser Val Ser Gln Ala Thr Asn Trp Thr Ile Gln Gln Asp Lys  
385 390 395 400

Leu Lys Pro Phe Trp Cys Tyr Asn Ile Ser Val Tyr Pro Met Leu His  
405 410 415

Asp Lys Val Gly Glu Pro Tyr Ser Ile Gln Ala Tyr Ala Lys Glu Gly  
420 425 430

Val Pro Ser Glu Gly Pro Glu Thr Lys Val Glu Asn Ile Gly Val Lys  
435 440 445

Thr Val Thr Ile Thr Trp Lys Glu Ile Pro Lys Ser Glu Arg Lys Gly  
 450 455 460

Ile Ile Cys Asn Tyr Thr Ile Phe Tyr Gln Ala Glu Gly Gly Lys Gly  
 465 470 475 480

Phe Ser Lys Thr Val Asn Ser Ser Ile Leu Gln Tyr Gly Leu Glu Ser  
 485 490 495

Leu Lys Arg Lys Thr Ser Tyr Ile Val Gln Val Met Ala Asn Thr Ser  
 500 505 510

Ala Gly Gly Thr Asn Gly Thr Ser Ile Asn Phe Lys Thr Leu Ser Phe  
 515 520 525

Ser Val Phe Glu Ile Ile Leu Ile Thr Ser Leu Ile Gly Gly Gly Leu  
 530 535 540

Leu Ile Leu Ile Ile Leu Thr Val Ala Tyr Gly Leu Lys Lys Pro Asn  
 545 550 555 560

Lys Leu Thr His Leu Cys Trp Pro Thr Val Pro Asn Pro Ala Glu Ser  
 565 570 575

Ser Ile Ala Thr Trp His Gly Asp Asp Phe Lys Asp Lys Leu Asn Leu  
 580 585 590

Lys Glu Ser Asp Asp Ser Val Asn Thr Glu Asp Arg Ile Leu Lys Pro  
 595 600 605

Cys Ser Thr Pro Ser Asp Lys Leu Val Ile Asp Lys Leu Val Val Asn  
 610 615 620

Phe Gly Asn Val Leu Gln Glu Ile Phe Thr Asp Glu Ala Arg Thr Gly  
 625 630 635 640

Gln Glu Lys Gln Phe Arg Arg Gly Lys Glu Trp Asp  
 645 650

<210> 15  
 <211> 662  
 <212> PRT  
 <213> Homo sapiens

<400> 15

Met Lys Leu Ser Pro Gln Pro Ser Cys Val Asn Leu Gly Met Met Trp

1	5	10	15
Thr Trp Ala Leu Trp Met Leu Pro Ser Leu Cys Lys Phe Ser Leu Ala	20	25	30
Ala Leu Pro Ala Lys Pro Glu Asn Ile Ser Cys Val Tyr Tyr Tyr Arg	35	40	45
Lys Asn Leu Thr Cys Thr Trp Ser Pro Gly Lys Glu Thr Ser Tyr Thr	50	55	60
Gln Tyr Thr Val Lys Arg Thr Tyr Ala Phe Gly Glu Lys His Asp Asn	65	70	75
Cys Thr Thr Asn Ser Ser Thr Ser Glu Asn Arg Ala Ser Cys Ser Phe	85	90	95
Phe Leu Pro Arg Ile Thr Ile Pro Asp Asn Tyr Thr Ile Glu Val Glu	100	105	110
Ala Glu Asn Gly Asp Gly Val Ile Lys Ser His Met Thr Tyr Trp Arg	115	120	125
Leu Glu Asn Ile Ala Lys Thr Glu Pro Pro Lys Ile Phe Arg Val Lys	130	135	140
Pro Val Leu Gly Ile Lys Arg Met Ile Gln Ile Glu Trp Ile Lys Pro	145	150	155
Glu Leu Ala Pro Val Ser Ser Asp Leu Lys Tyr Thr Leu Arg Phe Arg	165	170	175
Thr Val Asn Ser Thr Ser Trp Met Glu Val Asn Phe Ala Lys Asn Arg	180	185	190
Lys Asp Lys Asn Gln Thr Tyr Asn Leu Thr Gly Leu Gln Pro Phe Thr	195	200	205
Glu Tyr Val Ile Ala Leu Arg Cys Ala Val Lys Glu Ser Lys Phe Trp	210	215	220
Ser Asp Trp Ser Gln Glu Lys Met Gly Met Thr Glu Glu Glu Ala Pro	225	230	235
Cys Gly Leu Glu Leu Trp Arg Val Leu Lys Pro Ala Glu Ala Asp Gly	245	250	255



Arg Arg Pro Val Arg Leu Leu Trp Lys Lys Ala Arg Gly Ala Pro Val  
 260 265 270

Leu Glu Lys Thr Leu Gly Tyr Asn Ile Trp Tyr Tyr Pro Glu Ser Asn  
 275 280 285

Thr Asn Leu Thr Glu Thr Met Asn Thr Thr Asn Gln Gln Leu Glu Leu  
 290 295 300

His Leu Gly Gly Glu Ser Phe Trp Val Ser Met Ile Ser Tyr Asn Ser  
 305 310 315 320

Leu Gly Lys Ser Pro Val Ala Thr Leu Arg Ile Pro Ala Ile Gln Glu  
 325 330 335

Lys Ser Phe Gln Cys Ile Glu Val Met Gln Ala Cys Val Ala Glu Asp  
 340 345 350

Gln Leu Val Val Lys Trp Gln Ser Ser Ala Leu Asp Val Asn Thr Trp  
 355 360 365

Met Ile Glu Trp Phe Pro Asp Val Asp Ser Glu Pro Thr Thr Leu Ser  
 370 375 380

Trp Glu Ser Val Ser Gln Ala Thr Asn Trp Thr Ile Gln Gln Asp Lys  
 385 390 395 400

Leu Lys Pro Phe Trp Cys Tyr Asn Ile Ser Val Tyr Pro Met Leu His  
 405 410 415

Asp Lys Val Gly Glu Pro Tyr Ser Ile Gln Ala Tyr Ala Lys Glu Gly  
 420 425 430

Val Pro Ser Glu Gly Pro Glu Thr Lys Val Glu Asn Ile Gly Val Lys  
 435 440 445

Thr Val Thr Ile Thr Trp Lys Glu Ile Pro Lys Ser Glu Arg Lys Gly  
 450 455 460

Ile Ile Cys Asn Tyr Thr Ile Phe Tyr Gln Ala Glu Gly Gly Lys Gly  
 465 470 475 480

Phe Ser Lys Thr Val Asn Ser Ser Ile Leu Gln Tyr Gly Leu Glu Ser  
 485 490 495

Leu Lys Arg Lys Thr Ser Tyr Ile Val Gln Val Met Ala Ser Thr Ser  
500 505 510

Ala Gly Gly Thr Asn Gly Thr Ser Ile Asn Phe Lys Thr Leu Ser Phe  
515 520 525

Ser Val Phe Glu Ile Ile Leu Ile Thr Ser Leu Ile Gly Gly Gly Leu  
530 535 540

Leu Ile Leu Ile Ile Leu Thr Val Ala Tyr Gly Leu Lys Lys Pro Asn  
545 550 555 560

Lys Leu Thr His Leu Cys Trp Pro Thr Val Pro Asn Pro Ala Glu Ser  
565 570 575

Ser Ile Ala Thr Trp His Gly Asp Asp Phe Lys Asp Lys Leu Asn Leu  
580 585 590

Lys Glu Ser Asp Asp Ser Val Asn Thr Glu Asp Arg Ile Leu Lys Pro  
595 600 605

Cys Ser Thr Pro Ser Asp Lys Leu Val Ile Asp Lys Leu Val Val Asn  
610 615 620

Phe Gly Asn Val Leu Gln Glu Ile Phe Thr Asp Glu Ala Arg Thr Gly  
625 630 635 640

Gln Glu Asn Asn Leu Gly Gly Glu Lys Asn Gly Thr Arg Ile Leu Ser  
645 650 655

Ser Cys Pro Thr Ser Ile  
660

<210> 16  
<211> 344  
<212> PRT  
<213> Homo sapiens

<400> 16

Asn Pro Lys Asn Glu Ser Ser Glu Asn Ile Arg Glu Arg Leu Ser Leu  
1 5 10 15

Pro Ser Thr Leu Gln Gln Asn Phe Gly Thr Leu Asn Phe Trp Phe Gln  
20 25 30

Arg Ser His Asn Phe His Asn Leu Thr Thr Glu Glu Gly Pro Ser Thr

35                      40                      45  
 Pro Ile Gly Thr Leu Lys Pro Gly Leu Val Ile Lys Ala Val Arg Lys  
 50                      55                      60  
 Leu Leu Met Asn Asp Ser Asp Gln Gly Gly Lys Leu Thr Thr Gly Val  
 65                      70                      75                      80  
 Phe Thr Pro Gln Gln Leu Ala Asn Thr Thr Asn Gln Gly Leu Ser Arg  
 85                      90                      95  
 Cys Leu Ser Arg Phe Lys Lys Val Ile Arg Ala Met Leu Met Met Lys  
 100                      105                      110  
 Ile Lys Leu Lys Arg Ile Thr Asn Ile Asn Cys Ser Gly His Ile Trp  
 115                      120                      125  
 Val Glu Pro Ala Thr Ile Phe Lys Met Gly Met Asn Ile Ser Ile Tyr  
 130                      135                      140  
 Cys Gln Ala Ala Ile Lys Asn Cys Gln Pro Arg Lys Leu His Phe Tyr  
 145                      150                      155                      160  
 Lys Asn Gly Ile Lys Glu Arg Phe Gln Ile Thr Arg Ile Asn Lys Thr  
 165                      170                      175  
 Thr Ala Arg Leu Trp Tyr Lys Asn Phe Leu Glu Pro His Ala Ser Met  
 180                      185                      190  
 Tyr Cys Thr Ala Glu Cys Pro Lys His Phe Gln Glu Thr Leu Ile Cys  
 195                      200                      205  
 Gly Lys Asp Ile Ser Ser Gly Phe Cys Ile Thr Asp Tyr Ser Gln Lys  
 210                      215                      220  
 Pro Ser Gln Val Leu Ala Gly Gly Pro Leu Ser Pro Asn Pro Thr Pro  
 225                      230                      235                      240  
 Gly Asn Val Glu Asp Pro Pro Asp Ile Pro Asp Glu Val Thr Cys Val  
 245                      250                      255  
 Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys Thr Trp Asn Ala Gly Lys  
 260                      265                      270  
 Leu Thr Tyr Ile Asp Thr Lys Tyr Val Val His Val Lys Ser Leu Glu  
 275                      280                      285

Thr Glu Glu Glu Gln Gln Tyr Leu Thr Ser Ser Tyr Ile Asn Ile Ser  
 290 295 300

Thr Asp Ser Leu Gln Gly Gly Lys Lys Tyr Leu Val Trp Val Gln Ala  
 305 310 315 320

Ala Asn Ala Leu Gly Met Glu Glu Ser Lys Gln Leu Gln Ile His Leu  
 325 330 335

Asp Asp Ile Ala Pro His Glu Arg  
 340

<210> 17  
 <211> 39  
 <212> PRT  
 <213> Homo sapiens

<400> 17

Ile Glu Asp Leu Ser Ile Asn Val Met Ala Ala Asn Ile Leu Glu Thr  
 1 5 10 15

Asn Asn Phe Leu Thr Arg Asp Thr Asn Met Lys Gln Ser Ala Phe Glu  
 20 25 30

Ser Gln Ile Phe Gly Thr Val  
 35

<210> 18  
 <211> 12  
 <212> PRT  
 <213> Homo sapiens

<400> 18

Ser Asn Trp Leu Ala Leu Lys Gly Asp Glu Glu Lys  
 1 5 10

<210> 19  
 <211> 2830  
 <212> DNA  
 <213> Homo sapiens

<400> 19  
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 ttcaaacagg ttgaaagagg gaaacagtct tttcctgctt ccagacatga atcagggtcac 120  
 tattcaatgg gatgcagtaa tagcccttta catactcttc agctgggtgtc atggaggaat 180  
 taaaaatata aactgctctg gccacatctg ggtagaacca gccacaattt ttaagatggg 240

tatgaatatac tctatatatt gccaaagcagc aattaagaac tgccaaccaa ggaaacttca	300
tttttataaa aatggcatca aagaagatt tcaaatacaca aggattaata aaacaacagc	360
tcggcttttg tataaaaact ttctggaacc acatgcttct atgtactgca ctgctgaatg	420
tcccaaacat tttcaagaga cactgatatg tggaaaagac atttcttctg gatatccgcc	480
agatattcct gatgaagtaa cctgtgtcat ttatgaatat tcaggcaaca tgacttgcac	540
ctggaatgct gggaagctca cctacataga cacaaaatac gtggtacatg tgaagagttt	600
agagacagaa gaagagcaac agtatctcac ctcaagctat attaacatct cactgatc	660
attacaaggt ggcaagaagt acttggttg ggtccaagca gcaaacgcac taggcatgga	720
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ttccagggct gagactataa atgctacagt gcccaagacc ataatttatt gggatagtca	840
aacaacaatt gaaaagggtt cctgtgaaat gagatacaag gctacaacaa accaaaactg	900
gaatgttaaa gaatttgaca ccaattttac atatgtgcaa cagtcagaat tctacttgga	960
gccaaacatt aagtacgtat ttcaagttag atgtcaagaa acaggcaaaa ggtactggca	1020
gccttggagt tcaactgtttt ttcataaaac acctgaaaca gttccccagg tcacatcaaa	1080
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tatgttgatca attctttctt tgattgggat atttaacaga tcattccgaa ctgggattaa	1260
aagaaggatc ttattgttaa taccaaagt gctttatgaa gatattccta atatgaaaaa	1320
cagcaatgtt gtgaaaatgc tacaggaaaa tagtgaactt atgaataata attccagtga	1380
gcaggtccta tatgttgatc ccatgattac agagataaaa gaaatcttca tcccagaaca	1440
caagcctaca gactacaaga aggagaatac aggacccctg gagacaagag actaccgcga	1500
aaactcgcta ttcgacaata ctacagttgt atatattcct gatctcaaca ctggatataa	1560
accccaaatt tcaaattttc tgcctgaggg aagccatctc agcaataata atgaaattac	1620
ttccttaaca cttaaacac cagttgattc cttagactca ggaaataatc ccagggttaca	1680
aaagcatcct aattttgctt tttctgtttc aagtgtgaat tactaagca acacaatatt	1740
tcttgagaa ttaagcctca tattaaatca aggagaatgc agttctcctg acatacaaaa	1800
ctcagtagag gaggaacca ccatgctttt ggaaaatgat tcaccagtg aaactattcc	1860
agaacagacc ctgcttctg atgaatttgt ctctgtttg gggatcgtga atgaggagtt	1920
gccatctatt aatacttatt ttccacaaaa tattttggaa agccacttca ataggatttc	1980
actcttgga aagtagagct gtgtggtcaa aatcaatatg agaaagctgc cttgcaatct	2040

gaacttgggt tttccctgca atagaaattg aattctgcct ctttttgaaa aaaatgtatt 2100  
cacatacaaa tcttcacatg gacacatggt ttcatttccc ttggataaat acctaggttag 2160  
gggattgctg gaccatatga taagcatatg tttcagttct accaatcttg tttccagagt 2220  
agtgacattt ctgtgctcct accatcacca tgtaagaatt cccgggagct ccatgccttt 2280  
ttaatttttag ccattcttct gcctcatttc ttaaaattag agaattaagg tcccgaaggt 2340  
ggaacatgct tcatgggtcac acatacaggc acaaaaacag cattatgtgg acgcctcatg 2400  
tattttttat agagtcaact atttcctctt tattttccct cattgaaaga tgcaaaacag 2460  
ctctctattg tgtacagaaa gggtaaataa tgcaaaatac ctggtagtaa aataaatgct 2520  
gaaaattttc ctttaaaata gaatcattag gccaggcgtg gtggctcatg cttgtaatcc 2580  
cagcactttg gtaggctgag gtaggtggat cacctgaggt caggagtctg agtccagcct 2640  
ggccaatatg ctgaaaccct gtctctacta aaattacaaa aattagccgg ccatgggtggc 2700  
aggtgcttgt aatcccagct acttgggagg ctgaggcagg agaatcactt gaaccaggaa 2760  
ggcagagggt gcactgagct gagattgtgc cactgcactc cagcctgggc aacaagagca 2820  
aaactctgtc 2830

<210> 20  
<211> 1890  
<212> DNA  
<213> Homo sapiens

<400> 20  
atgaatcagg tcactattca atgggatgca gtaatagccc ttacatact cttcagctgg 60  
tgtcatggag gaattacaaa tataaactgc tctggccaca tctgggtaga accagccaca 120  
atttttaaga tgggtatgaa tatctctata tattgccaag cagcaattaa gaactgccaa 180  
ccaaggaaac ttcattttta taaaaatggc atcaaagaaa gatttcaaatt cacaaggatt 240  
aataaaacaa cagctcggct ttggtataaa aactttctgg aaccacatgc ttctatgtac 300  
tgcactgctg aatgtcccaa acattttcaa gagacactga tatgtggaaa agacatttct 360  
tctggatata cgccagatat tctgatgaa gtaacctgtg tcatttatga atattcaggc 420  
aacatgactt gcacctggaa tgctgggaag ctcacctaca tagacacaaa atacgtggta 480  
catgtgaaga gtttagagac agaagaagag caacagtatc tcacctcaag ctatattaac 540  
atctccactg attcattaca aggtggcaag aagtacttgg tttgggtcca agcagcaaac 600  
gcactaggca tggaagagtc aaaacaactg caaattcacc tggatgatat agtgatacct 660  
tctgcagccg tcattttccag ggctgagact ataaatgcta cagtgcccaa gaccataatt 720  
tattgggata gtcaaacac aattgaaaag gtttcctgtg aatgagata caaggctaca 780

acaaacaaa cttggaatgt taaagaattt gacaccaatt ttacatatgt gcaacagtca 840  
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 aaaagggtact ggcagccttg gagttcactg ttttttcata aaacacctga aacagttccc 960  
 cagggtcacat caaaagcatt ccaacatgac acatggaatt ctgggctaac agttgcttcc 1020  
 atctctacag ggcaccttac ttctgacaac agaggagaca ttggactttt attgggaatg 1080  
 atcgtctttg ctgttatgtt gtcaattctt tctttgattg ggatatttaa cagatcattc 1140  
 cgaactggga ttaaaagaag gatcttattg ttaataccaa agtggcttta tgaagatatt 1200  
 cctaatatga aaaacagcaa tgttggtgaaa atgctacagg aaaatagtga acttatgaat 1260  
 aataattcca gtgagcaggt cctatatgtt gatcccatga ttacagagat aaaagaaatc 1320  
 ttcaccccag aacacaagcc tacagactac aagaaggaga atacaggacc cctggagaca 1380  
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 aacactggat ataaacccca aatttcaa at tttctgctg aggggaagcca tctcagcaat 1500  
 aataatgaaa ttacttcctt aacacttaaa ccaccagttg attccttaga ctcaggaaat 1560  
 aatcccaggt tacaaaagca tcctaatttt gctttttctg tttcaagtgt gaattcacta 1620  
 agcaacacaa tatttcttgg agaattaagc ctcatattaa atcaaggaga atgcagttct 1680  
 cctgacatac aaaactcagt agaggaggaa accaccatgc ttttggaana tgattcaccc 1740  
 agtgaaacta ttccagaaca gaccctgctt cctgatgaat ttgtctctg tttggggatc 1800  
 gtgaatgagg agttgccatc tattaatact tattttccac aaaatatttt ggaaagccac 1860  
 ttcaatagga tttcactctt ggaaaagtag 1890

<210> 21  
 <211> 629  
 <212> PRT  
 <213> Homo sapiens

<400> 21

Met Asn Gln Val Thr Ile Gln Trp Asp Ala Val Ile Ala Leu Tyr Ile  
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Leu Phe Ser Trp Cys His Gly Gly Ile Thr Asn Ile Asn Cys Ser Gly  
 20 25 30

His Ile Trp Val Glu Pro Ala Thr Ile Phe Lys Met Gly Met Asn Ile  
 35 40 45

Ser Ile Tyr Cys Gln Ala Ala Ile Lys Asn Cys Gln Pro Arg Lys Leu  
 50 55 60

His Phe Tyr Lys Asn Gly Ile Lys Glu Arg Phe Gln Ile Thr Arg Ile  
65 70 75 80

Asn Lys Thr Thr Ala Arg Leu Trp Tyr Lys Asn Phe Leu Glu Pro His  
85 90 95

Ala Ser Met Tyr Cys Thr Ala Glu Cys Pro Lys His Phe Gln Glu Thr  
100 105 110

Leu Ile Cys Gly Lys Asp Ile Ser Ser Gly Tyr Pro Pro Asp Ile Pro  
115 120 125

Asp Glu Val Thr Cys Val Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys  
130 135 140

Thr Trp Asn Ala Gly Lys Leu Thr Tyr Ile Asp Thr Lys Tyr Val Val  
145 150 155 160

His Val Lys Ser Leu Glu Thr Glu Glu Glu Gln Gln Tyr Leu Thr Ser  
165 170 175

Ser Tyr Ile Asn Ile Ser Thr Asp Ser Leu Gln Gly Gly Lys Lys Tyr  
180 185 190

Leu Val Trp Val Gln Ala Ala Asn Ala Leu Gly Met Glu Glu Ser Lys  
195 200 205

Gln Leu Gln Ile His Leu Asp Asp Ile Val Ile Pro Ser Ala Ala Val  
210 215 220

Ile Ser Arg Ala Glu Thr Ile Asn Ala Thr Val Pro Lys Thr Ile Ile  
225 230 235 240

Tyr Trp Asp Ser Gln Thr Thr Ile Glu Lys Val Ser Cys Glu Met Arg  
245 250 255

Tyr Lys Ala Thr Thr Asn Gln Thr Trp Asn Val Lys Glu Phe Asp Thr  
260 265 270

Asn Phe Thr Tyr Val Gln Gln Ser Glu Phe Tyr Leu Glu Pro Asn Ile  
275 280 285

Lys Tyr Val Phe Gln Val Arg Cys Gln Glu Thr Gly Lys Arg Tyr Trp  
290 295 300



Gln Pro Trp Ser Ser Leu Phe Phe His Lys Thr Pro Glu Thr Val Pro  
305 310 315 320

Gln Val Thr Ser Lys Ala Phe Gln His Asp Thr Trp Asn Ser Gly Leu  
325 330 335

Thr Val Ala Ser Ile Ser Thr Gly His Leu Thr Ser Asp Asn Arg Gly  
340 345 350

Asp Ile Gly Leu Leu Leu Gly Met Ile Val Phe Ala Val Met Leu Ser  
355 360 365

Ile Leu Ser Leu Ile Gly Ile Phe Asn Arg Ser Phe Arg Thr Gly Ile  
370 375 380

Lys Arg Arg Ile Leu Leu Leu Ile Pro Lys Trp Leu Tyr Glu Asp Ile  
385 390 395 400

Pro Asn Met Lys Asn Ser Asn Val Val Lys Met Leu Gln Glu Asn Ser  
405 410 415

Glu Leu Met Asn Asn Asn Ser Ser Glu Gln Val Leu Tyr Val Asp Pro  
420 425 430

Met Ile Thr Glu Ile Lys Glu Ile Phe Ile Pro Glu His Lys Pro Thr  
435 440 445

Asp Tyr Lys Lys Glu Asn Thr Gly Pro Leu Glu Thr Arg Asp Tyr Pro  
450 455 460

Gln Asn Ser Leu Phe Asp Asn Thr Thr Val Val Tyr Ile Pro Asp Leu  
465 470 475 480

Asn Thr Gly Tyr Lys Pro Gln Ile Ser Asn Phe Leu Pro Glu Gly Ser  
485 490 495

His Leu Ser Asn Asn Asn Glu Ile Thr Ser Leu Thr Leu Lys Pro Pro  
500 505 510

Val Asp Ser Leu Asp Ser Gly Asn Asn Pro Arg Leu Gln Lys His Pro  
515 520 525

Asn Phe Ala Phe Ser Val Ser Ser Val Asn Ser Leu Ser Asn Thr Ile  
530 535 540

Phe Leu Gly Glu Leu Ser Leu Ile Leu Asn Gln Gly Glu Cys Ser Ser

545

550

555

560

Pro Asp Ile Gln Asn Ser Val Glu Glu Glu Thr Thr Met Leu Leu Glu  
 565 570 575

Asn Asp Ser Pro Ser Glu Thr Ile Pro Glu Gln Thr Leu Leu Pro Asp  
 580 585 590

Glu Phe Val Ser Cys Leu Gly Ile Val Asn Glu Glu Leu Pro Ser Ile  
 595 600 605

Asn Thr Tyr Phe Pro Gln Asn Ile Leu Glu Ser His Phe Asn Arg Ile  
 610 615 620

Ser Leu Leu Glu Lys  
 625

<210> 22  
 <211> 1698  
 <212> DNA  
 <213> Homo sapiens

<400> 22  
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 atttttaaga tgggatgaa tatctctata tattgccaag cagcaattaa gaactgccaa 180  
 ccaaggaaac ttcattttta taaaaatggc atcaaagaaa gatttcaa at cacaaggatt 240  
 aataaaacaa cagctcggct ttggtataaa aactttcttg aaccacatgc ttctatgtac 300  
 tgcactgctg aatgtcccaa acattttcaa gagacactga tatgtggaaa agacatttct 360  
 tctggatatt cgccagatat tctgatgaa gtaacctgtg tcatttatga atattcaggc 420  
 aacatgactt gcacctggaa tgctgggaag ctcacctaca tagacacaaa atacgtggta 480  
 catgtgaaga gtttagagac agaagaagag caacagtatc tcacctcaag ctatattaac 540  
 atctccactg attcattaca aggtggcaag aagtacttgg tttgggtcca agcagcaaac 600  
 gcactaggca tggaagagtc aaaacaactg caaattcacc tggatgat at agtgatacct 660  
 tctgcagccg tcatttccag ggctgagact ataaatgcta cagtgcccaa gaccataatt 720  
 tattgggata gtcaaacaac aattgaaaag gtttcctgtg aatgagata caaggctaca 780  
 acaaacaaa cttggaatgt taaagaattt gacaccaatt ttacatatgt gcaacagtca 840  
 gaattctact tggagccaaa cattaagtac gtatttcaag tgagatgtca agaaacaggc 900  
 aaaaggatct ggcagccttg gagttcactg ttttttcata aaacacctga aacagggtatt 960

aaaagaagga tcttattggt aataccaaag tggctttatg aagatattcc taatatgaaa 1020  
 aacagcaatg ttgtgaaaat gctacaggaa aatagtgaac ttatgaataa taattccagt 1080  
 gagcaggtcc tatatgttga tcccatgatt acagagataa aagaaatcct catcccagaa 1140  
 cacaagccta cagactacaa gaaggagaat acaggacccc tggagacaag agactacccg 1200  
 caaaactcgc tattcgacaa tactacagtt gtatatattc ctgatctcaa cactggatat 1260  
 aaaccccaaa tttcaaattt tctgcctgag ggaagccatc tcagcaataa taatgaaatt 1320  
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 caaaagcatc ctaattttgc tttttctggt tcaagtgtga attcactaag caacacaata 1440  
 tttcttggag aattaagcct catattaaat caaggagaat gcagttctcc tgacatacaa 1500  
 aactcagtag aggaggaaac caccatgctt ttggaaaatg attcaccag tgaaactatt 1560  
 ccagaacaga ccctgcttcc tgatgaattt gtctcctggt tggggatcgt gaatgaggag 1620  
 ttgccatcta ttaatactta ttttcacaa aatattttgg aaagccactt caataggatt 1680  
 tcactcttgg aaaagtag 1698

<210> 23  
 <211> 565  
 <212> PRT  
 <213> Homo sapiens

<400> 23

Met Asn Gln Val Thr Ile Gln Trp Asp Ala Val Ile Ala Leu Tyr Ile  
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Leu Phe Ser Trp Cys His Gly Gly Ile Thr Asn Ile Asn Cys Ser Gly  
 20 25 30

His Ile Trp Val Glu Pro Ala Thr Ile Phe Lys Met Gly Met Asn Ile  
 35 40 45

Ser Ile Tyr Cys Gln Ala Ala Ile Lys Asn Cys Gln Pro Arg Lys Leu  
 50 55 60

His Phe Tyr Lys Asn Gly Ile Lys Glu Arg Phe Gln Ile Thr Arg Ile  
 65 70 75 80

Asn Lys Thr Thr Ala Arg Leu Trp Tyr Lys Asn Phe Leu Glu Pro His  
 85 90 95

Ala Ser Met Tyr Cys Thr Ala Glu Cys Pro Lys His Phe Gln Glu Thr  
 100 105 110

Leu Ile Cys Gly Lys Asp Ile Ser Ser Gly Tyr Pro Pro Asp Ile Pro  
 115 120 125

Asp Glu Val Thr Cys Val Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys  
 130 135 140

Thr Trp Asn Ala Gly Lys Leu Thr Tyr Ile Asp Thr Lys Tyr Val Val  
 145 150 155 160

His Val Lys Ser Leu Glu Thr Glu Glu Glu Gln Gln Tyr Leu Thr Ser  
 165 170 175

Ser Tyr Ile Asn Ile Ser Thr Asp Ser Leu Gln Gly Gly Lys Lys Tyr  
 180 185 190

Leu Val Trp Val Gln Ala Ala Asn Ala Leu Gly Met Glu Glu Ser Lys  
 195 200 205

Gln Leu Gln Ile His Leu Asp Asp Ile Val Ile Pro Ser Ala Ala Val  
 210 215 220

Ile Ser Arg Ala Glu Thr Ile Asn Ala Thr Val Pro Lys Thr Ile Ile  
 225 230 235 240

Tyr Trp Asp Ser Gln Thr Thr Ile Glu Lys Val Ser Cys Glu Met Arg  
 245 250 255

Tyr Lys Ala Thr Thr Asn Gln Thr Trp Asn Val Lys Glu Phe Asp Thr  
 260 265 270

Asn Phe Thr Tyr Val Gln Gln Ser Glu Phe Tyr Leu Glu Pro Asn Ile  
 275 280 285

Lys Tyr Val Phe Gln Val Arg Cys Gln Glu Thr Gly Lys Arg Tyr Trp  
 290 295 300

Gln Pro Trp Ser Ser Leu Phe Phe His Lys Thr Pro Glu Thr Gly Ile  
 305 310 315 320

Lys Arg Arg Ile Leu Leu Leu Ile Pro Lys Trp Leu Tyr Glu Asp Ile  
 325 330 335

Pro Asn Met Lys Asn Ser Asn Val Val Lys Met Leu Gln Glu Asn Ser  
 340 345 350

Glu Leu Met Asn Asn Asn Ser Ser Glu Gln Val Leu Tyr Val Asp Pro  
 355 360 365

Met Ile Thr Glu Ile Lys Glu Ile Phe Ile Pro Glu His Lys Pro Thr  
 370 375 380

Asp Tyr Lys Lys Glu Asn Thr Gly Pro Leu Glu Thr Arg Asp Tyr Pro  
 385 390 395 400

Gln Asn Ser Leu Phe Asp Asn Thr Thr Val Val Tyr Ile Pro Asp Leu  
 405 410 415

Asn Thr Gly Tyr Lys Pro Gln Ile Ser Asn Phe Leu Pro Glu Gly Ser  
 420 425 430

His Leu Ser Asn Asn Asn Glu Ile Thr Ser Leu Thr Leu Lys Pro Pro  
 435 440 445

Val Asp Ser Leu Asp Ser Gly Asn Asn Pro Arg Leu Gln Lys His Pro  
 450 455 460

Asn Phe Ala Phe Ser Val Ser Ser Val Asn Ser Leu Ser Asn Thr Ile  
 465 470 475 480

Phe Leu Gly Glu Leu Ser Leu Ile Leu Asn Gln Gly Glu Cys Ser Ser  
 485 490 495

Pro Asp Ile Gln Asn Ser Val Glu Glu Glu Thr Thr Met Leu Leu Glu  
 500 505 510

Asn Asp Ser Pro Ser Glu Thr Ile Pro Glu Gln Thr Leu Leu Pro Asp  
 515 520 525

Glu Phe Val Ser Cys Leu Gly Ile Val Asn Glu Glu Leu Pro Ser Ile  
 530 535 540

Asn Thr Tyr Phe Pro Gln Asn Ile Leu Glu Ser His Phe Asn Arg Ile  
 545 550 555 560

Ser Leu Leu Glu Lys  
 565

<210> 24  
 <211> 1071  
 <212> DNA  
 <213> Homo sapiens

<400> 24  
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<212> PRT  
<213> Homo sapiens

<400> 25

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His Ile Trp Val Glu Pro Ala Thr Ile Phe Lys Met Gly Met Asn Ile  
35 40 45

Ser Ile Tyr Cys Gln Ala Ala Ile Lys Asn Cys Gln Pro Arg Lys Leu  
50 55 60

His Phe Tyr Lys Asn Gly Ile Lys Glu Arg Phe Gln Ile Thr Arg Ile  
65 70 75 80

Asn Lys Thr Thr Ala Arg Leu Trp Tyr Lys Asn Phe Leu Glu Pro His  
85 90 95

Ala Ser Met Tyr Cys Thr Ala Glu Cys Pro Lys His Phe Gln Glu Thr  
100 105 110

Leu Ile Cys Gly Lys Asp Ile Ser Ser Gly Tyr Pro Pro Asp Ile Pro  
115 120 125

Asp Glu Val Thr Cys Val Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys  
130 135 140

Thr Trp Asn Ala Gly Lys Leu Thr Tyr Ile Asp Thr Lys Tyr Val Val  
145 150 155 160

His Val Lys Ser Leu Glu Thr Glu Glu Glu Gln Gln Tyr Leu Thr Ser  
165 170 175

Ser Tyr Ile Asn Ile Ser Thr Asp Ser Leu Gln Gly Gly Lys Lys Tyr  
180 185 190

Leu Val Trp Val Gln Ala Ala Asn Ala Leu Gly Met Glu Glu Ser Lys  
195 200 205

Gln Leu Gln Ile His Leu Asp Asp Ile Val Ile Pro Ser Ala Ala Val  
210 215 220

Ile Ser Arg Ala Glu Thr Ile Asn Ala Thr Val Pro Lys Thr Ile Ile  
225 230 235 240

Tyr Trp Asp Ser Gln Thr Thr Ile Glu Lys Val Ser Cys Glu Met Arg  
245 250 255

Tyr Lys Ala Thr Thr Asn Gln Thr Trp Asn Val Lys Glu Phe Asp Thr  
260 265 270

Asn Phe Thr Tyr Val Gln Gln Ser Glu Phe Tyr Leu Glu Pro Asn Ile  
275 280 285

Lys Tyr Val Phe Gln Val Arg Cys Gln Glu Thr Gly Lys Arg Tyr Trp  
290 295 300

Gln Pro Trp Ser Ser Leu Phe Phe His Lys Thr Pro Glu Thr Val Pro

305                      310                      315                      320  
 Gln Val Thr Ser Lys Ala Phe Gln His Asp Thr Trp Asn Ser Gly Leu  
                          325                      330                      335  
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 Gly Ser Tyr Cys  
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 <212> PRT  
 <213> Homo sapiens  
  
 <400> 26  
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 His Ile Trp Val Glu Pro Ala Thr Ile Phe Lys Met Gly Met Asn Ile  
                                     35                                      40                                      45  
 Ser Ile Tyr Cys Gln Ala Ala Ile Lys Asn Cys Gln Pro Arg Lys Leu  
                                     50                                      55                                      60  
 His Phe Tyr Lys Asn Gly Ile Lys Glu Arg Phe Gln Ile Thr Arg Ile  
 65                                      70                                      75                                      80  
 Asn Lys Thr Thr Ala Arg Leu Trp Tyr Lys Asn Phe Leu Glu Pro His  
                                     85                                      90                                      95  
 Ala Ser Met Tyr Cys Thr Ala Glu Cys Pro Lys His Phe Gln Glu Thr  
                                     100                                      105                                      110  
 Leu Ile Cys Gly Lys Asp Ile Ser Ser Gly Tyr Pro Pro Asp Ile Pro  
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 Asp Glu Val Thr Cys Val Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys  
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 Thr Trp Asn Ala Gly Lys Leu Thr Tyr Ile Asp Thr Lys Tyr Val Val  
 145                                      150                                      155                                      160



His Val Lys Ser Leu Glu Thr Glu Glu Glu Gln Gln Tyr Leu Thr Ser  
165 170 175

Ser Tyr Ile Asn Ile Ser Thr Asp Ser Leu Gln Gly Gly Lys Lys Tyr  
180 185 190

Leu Val Trp Val Gln Ala Ala Asn Ala Leu Gly Met Glu Glu Ser Lys  
195 200 205

Gln Leu Gln Ile His Leu Asp Asp Ile Val Ile Pro Ser Ala Ala Val  
210 215 220

Ile Ser Arg Ala Glu Thr Ile Asn Ala Thr Val Pro Lys Thr Ile Ile  
225 230 235 240

Tyr Trp Asp Ser Gln Thr Thr Ile Glu Lys Val Ser Cys Glu Met Arg  
245 250 255

Tyr Lys Ala Thr Thr Asn Gln Thr Trp Asn Val Lys Glu Phe Asp Thr  
260 265 270

Asn Phe Thr Tyr Val Gln Gln Ser Glu Phe Tyr Leu Glu Pro Asn Ile  
275 280 285

Lys Tyr Val Phe Gln Val Arg Cys Gln Glu Thr Gly Lys Arg Tyr Trp  
290 295 300

Gln Pro Trp Ser Ser Pro Phe Phe His Lys Thr Pro Glu Thr Val Pro  
305 310 315 320

Gln Val Thr Ser Lys Ala Phe Gln His Asp Thr Trp Asn Ser Gly Leu  
325 330 335

Thr Val Ala Ser Ile Ser Thr Gly His Leu Thr Ser Asp Asn Arg Gly  
340 345 350

Asp Ile Gly Leu Leu Leu Gly Met Ile Val Phe Ala Val Met Leu Ser  
355 360 365

Ile Leu Ser Leu Ile Gly Ile Phe Asn Arg Ser Phe Pro Asn Trp Asp  
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<210> 27  
<211> 644  
<212> PRT  
<213> Mus musculus

<400> 27

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20 25 30

Asp Met Trp Val Glu Pro Gly Glu Ile Phe Gln Met Gly Ile Asn Val  
35 40 45

Ser Ile Tyr Cys Gln Glu Ala Leu Lys His Cys Arg Pro Arg Asn Leu  
50 55 60

Tyr Phe Tyr Lys Asn Gly Phe Lys Glu Glu Phe Asp Ile Thr Arg Ile  
65 70 75 80

Asn Arg Thr Thr Ala Arg Ile Trp Tyr Lys Gly Phe Ser Glu Pro His  
85 90 95

Ala Tyr Met His Cys Thr Ala Glu Cys Pro Gly His Phe Gln Glu Thr  
100 105 110

Leu Ile Cys Gly Lys Asp Ile Ser Ser Gly His Pro Pro Asp Ala Pro  
115 120 125

Ser Asn Leu Thr Cys Val Ile Tyr Glu Tyr Ser Gly Asn Met Thr Cys  
130 135 140

Thr Trp Asn Thr Gly Lys Pro Thr Tyr Ile Asp Thr Lys Tyr Ile Val  
145 150 155 160

His Val Lys Ser Leu Glu Thr Glu Glu Glu Gln Gln Tyr Leu Ala Ser  
165 170 175

Ser Tyr Val Lys Ile Ser Thr Asp Ser Leu Gln Gly Ser Arg Lys Tyr  
180 185 190

Leu Val Trp Val Gln Ala Val Asn Ser Leu Gly Met Glu Asn Ser Gln  
195 200 205

Gln Leu His Val His Leu Asp Asp Ile Val Ile Pro Ser Ala Ser Ile  
210 215 220

Ile Ser Arg Ala Glu Thr Thr Asn Asp Thr Val Pro Lys Thr Ile Val  
225 230 235 240

Tyr Trp Lys Ser Lys Thr Met Ile Glu Lys Val Phe Cys Glu Met Arg  
245 250 255

Tyr Lys Thr Thr Thr Asn Gln Thr Trp Ser Val Lys Glu Phe Asp Ala  
260 265 270

Asn Phe Thr Tyr Val Gln Gln Ser Glu Phe Tyr Leu Glu Pro Asp Ser  
275 280 285

Lys Tyr Val Phe Gln Val Arg Cys Gln Glu Thr Gly Lys Arg Asn Trp  
290 295 300

Gln Pro Trp Ser Ser Pro Phe Val His Gln Thr Ser Gln Glu Thr Gly  
305 310 315 320

Lys Arg Asn Trp Gln Pro Trp Ser Ser Pro Phe Val His Gln Thr Ser  
325 330 335

Gln Thr Val Ser Gln Val Thr Ala Lys Ser Ser His Glu Pro Gln Lys  
340 345 350

Met Glu Met Leu Ser Ala Thr Ile Phe Arg Gly His Pro Ala Ser Gly  
355 360 365

Asn His Gln Asp Ile Gly Leu Leu Ser Gly Met Val Phe Leu Ala Ile  
370 375 380

Met Leu Pro Ile Phe Ser Leu Ile Gly Ile Phe Asn Arg Ser Leu Arg  
385 390 395 400

Ile Gly Ile Lys Arg Lys Val Leu Leu Met Ile Pro Lys Trp Leu Tyr  
405 410 415

Glu Asp Ile Pro Asn Met Glu Asn Ser Asn Val Ala Lys Leu Leu Gln  
420 425 430

Glu Lys Ser Val Phe Glu Asn Asp Asn Ala Ser Glu Gln Ala Leu Tyr  
435 440 445

Val Asp Pro Val Leu Thr Glu Ile Ser Glu Ile Ser Pro Leu Glu His  
450 455 460

Lys Pro Thr Asp Tyr Lys Glu Glu Arg Leu Thr Gly Leu Leu Glu Thr  
465 470 475 480

Arg Asp Cys Pro Leu Gly Met Leu Ser Thr Ser Ser Ser Val Val Tyr  
 485 490 495

Ile Pro Asp Leu Asn Thr Gly Tyr Lys Pro Gln Val Ser Asn Val Pro  
 500 505 510

Pro Gly Gly Asn Leu Phe Ile Asn Arg Asp Glu Arg Asp Pro Thr Ser  
 515 520 525

Leu Glu Thr Thr Asp Asp His Phe Ala Arg Leu Lys Thr Tyr Pro Asn  
 530 535 540

Phe Gln Phe Ser Ala Ser Ser Met Ala Leu Leu Asn Lys Thr Leu Ile  
 545 550 555 560

Leu Asp Glu Leu Cys Leu Val Leu Asn Gln Gly Glu Phe Asn Ser Leu  
 565 570 575

Asp Ile Lys Asn Ser Arg Gln Glu Glu Thr Ser Ile Val Leu Gln Ser  
 580 585 590

Asp Ser Pro Ser Glu Thr Ile Pro Ala Gln Thr Leu Leu Ser Asp Glu  
 595 600 605

Phe Val Ser Cys Leu Ala Ile Gly Asn Glu Asp Leu Pro Ser Ile Asn  
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Ser Tyr Phe Pro Gln Asn Val Leu Glu Ser His Phe Ser Arg Ile Ser  
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Leu Phe Gln Lys

<210> 28

<211> 2181

<212> DNA

<213> Mus musculus

<400> 28

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<210> 29

<211> 1935

<212> DNA

<213> Mus musculus

<400> 29

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